

SCALING TECHNIQUES FOR COMBUSTION DEVICE RANDOM VIBRATION PREDICTIONS

DUE TO COMBUSTION DYNAMICS

R.J. Kenny, R. C. Ferebee, and L. D. Duvall
NASA Marshall Space Flight Center
Huntsville, AL

ABSTRACT

This work presents compares scaling techniques that can be used for prediction of combustion device component random vibration levels with excitation due to the internal combustion dynamics. Acceleration and unsteady dynamic pressure data from multiple component test programs are compared and normalized per the two scaling approaches reviewed. Two scaling technique are reviewed and compared against the collected component test data. The first technique is an existing approach developed by Barrett, and the second technique is an updated approach new to this work. Results from utilizing both techniques are presented and recommendations about future component random vibration prediction approaches are given.